

**HEW Associates Ltd**  
Inspired Business Improvement

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**What is Lean?**

*Lean is a proven path to **Profitable Growth***

driven by

*the provision of exceptional **Customer Value**  
at the best possible cost*

enabled by

*the ruthless and relentless elimination of **Waste***

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**Lean is – Profitable Growth**

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**Reading List**

Lean Thinking – Womack and Jones - ISBN-13 : 978-0743249270

The New Lean Toolbox – John Bicheno – ISBN 0 9541 2441 3

The Quality 75 – John Bicheno - ISBN 0 9541244 0 5

The Goal – E M Goldratt & Jeff Cox - ISBN 0 566 07418 4

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**The 5 LEAN Principles**

- 1 Specify Value By Offering** – Understand and specify what adds value from the perspective of the Customer
- 2 Integrate the Value Stream** – Identify steps in the whole value stream to highlight wastes
- 3 Make the Offering Flow** – Create a continuous flow of activities along the value stream
- 4 At the Pull of the Customer** – Only carry out activities in response to pull from the Customer
- 5 In pursuit of Perfection** – Strive for perfection by continually creating value and removing successive layers of waste

*Becoming a winning Team*

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**1 Specify Value By Offering**

Understand and specify what adds value from the perspective of the Customer

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**2 Integrate the Value Stream**

Bottom tier Supplier → Consumers

The set of processes along the supply chain that delivers what the end customer values while also meeting business objectives

- Value Adding Activities
- Non Value Adding Activities

Identify steps in the whole value stream to highlight wastes

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**3 Make the Offering Flow**

Continuous Flow

- Waste (Muda)** – Non value adding to the product or service in the eyes of the customer
- Unevenness (Mura)** – Variation of work content in the process
- Overburden (Muri)** – Excessive work content above the capacity of the process

Create a continuous flow of activities along the Value stream

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**THE 8 WASTE**

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**4 At the Pull of the Customer**

**Kan Ban**  
What is needed,  
When it is needed  
In the quantity needed


- Aligns supply to demand
- Optimises inventory and lead time
- Makes status of work flow visible
- Makes problems visible
- Enables continuous improvement

Only carry out activities in response to pull from the Customer.


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**5 In pursuit of Perfection**



A Basic Mindset - Plan Do Check Act - Deming




- Plan to improve your operations first by finding out what things are going wrong
- Do changes designed to solve the problems on a small or experimental scale first.
- Check whether the small scale or experimental changes are achieving the desired result or not.
- Act to implement changes on a larger scale if the experiment is successful.

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**Single Piece Flow Simulation**

Creating:  
-One-Piece Flow  
-Balanced Work



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**Purpose**

The purpose of the simulation is to prove the benefits of:

- implementing continuous flow (one-piece flow) and
- balancing the work load

By playing three rounds (assembling robots from Lego, before and after implementing One-piece-flow and then Balancing) we will demonstrate how we can increase the throughput while using the same number of people

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**Lean Simulation**  
**Plasmo Robotics Ltd**

Traditional manufacturing set-up  
Produces a high quality product  
Has large inventories  
Cannot deliver on time  
Has negotiated a new contract and it must improve their throughput

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**Round 3**

**Balanced Work**

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**Standardised Work**

**What is it?**  
A methodology used to standardise the way a collection of tasks are completed

**Why use it?**  
Quality and productivity levels are stabilised when the job is done the same way every time. This becomes the foundation of improvement

**Where is it used?**  
Where a job is made up of a number of tasks and frequently repeated.

**When is it used?**  
Every time the job is done.

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**Standardised Work**

**How does it work?**

A Job can be broken into elements

10 secs    15 secs    2 secs    5 secs

20 secs    5 secs    3 secs

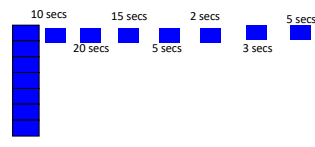


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**Standardised Work**

The elements are arranged in the order the job is done



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### Standardised Work

The elements are arranged in the order the job is done  
(sometimes known as Standard Operating Procedures or Quality Process Sheets)

- Pick parts
- Place parts in jig
- Clamp parts
- Apply sealer
- Weld
- Unclamp
- Stack product

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### Standardised Work

The elements of work can be graphed

- Stack product 5 secs
- Unclamp 3 secs
- Weld 15 secs
- Apply sealer 5 secs
- Clamp parts 2 secs
- Place parts in jig 10 secs
- Pick parts 20 secs

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### Standardised Work

The elements of work can be coloured VA or NVA

- Stack product 5 secs
- Unclamp 3 secs
- Weld 15 secs
- Apply sealer 5 secs
- Clamp parts 2 secs
- Place parts in jig 10 secs
- Pick parts 20 secs

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### Standardised Work

Operators in the same Team are added

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### Standardised Work

Takt time is added

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### Standardised Work

What is Takt Time?

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### Standardised Work

What is Takt Time?

Takt is the German word for Time or beat.

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### Standardised Work

What is Takt Time?

When a beat is maintained, there are a known number of beats per minute/hour/day

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### Standardised Work

What is Takt Time?

When a product is produced to the beat, a known number of products are produced within a specified period of time (in seconds)

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### Standardised Work

Calculating Takt

Where we want to produce 60 products an hour

We need to produce 1 product per minute (60 secs)

Therefore **Takt (secs) = Available Time (secs) / No. Product Required**

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### Standardised Work

Takt Time Example

Where we want to produce 80 products an hour

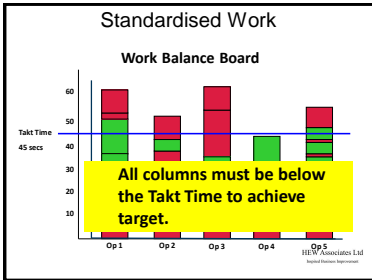
Takt (secs) =  $\frac{\text{Available Time (secs)}}{\text{No. Product Required}}$

Takt (secs) =  $\frac{3600 \text{ (secs)}}{80 \text{ (units)}}$

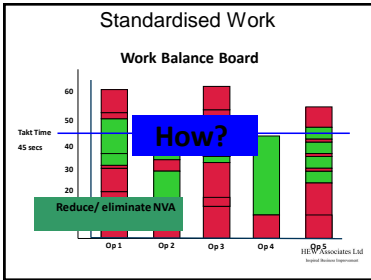
**Takt (secs) = 45 secs**

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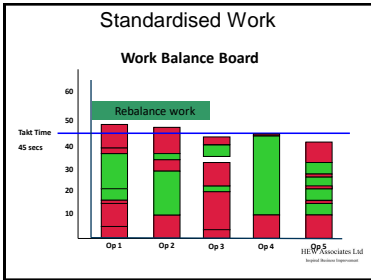
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